EYES

HISTORY

Pain - iritis, glaucoma, corneal abrasion, photophobia
Myopia - nearsightedness
Hyperopia - farsightedness
Astigmatism - variations in corneal curvature
Phoria - muscle imbalances
Scotoma - blind spot
Diplopia - double vision
Spots - those in front of the lens move with the gaze, those behind the lens move away from the gaze.
Free floaters - drift in and out of the field of vision
Red eyes - conjunctivitis
Subconjunctival hemorrhages - history of sneeze or cough
Puffy eyes - allergic, protein loss, renal disease

EXAM

Orbit and adnexa:

eyebrows - Loss of lateral 1/3 indicates myxedema
exophthalmos - Abnormal protrusion, >16mm (hyperthyroidism, tumors of the orbit, AV fistulas).
Unilateral usually indicates local disease (though hyperthyroidism may present this way).
auscultation of the globe - for bruits (with the bell).

Lids:

ectropion - eversion of the lid
entropion - inversion of the lid
hordeolum - (sty) infection of sebaceous gland at the lashes
meibonitis - infection along of the glands along the underside of the lid.
chalazion - cyst in the meibomian glands
canthus - the medial and lateral angles
ocular hypertelorism - when the eyes are too far apart
inner canthi distance - less than 40mm
pupil distance - less than 70mm
outer canthi - less than 95mm
lid position - controlled by three sets of muscles
orbicularis oculi muscle - 7th CN
levator muscle - oculomotor (CN III)
mueller - via parasympathetic and sympathetic
ptosis - dropping (interruption of any of the above nerve pathways)
stare - abnormal elevation of the lid (see the sclera above the pupil)
lid lag - have the patient look up then down, see the same effect as in stare above (both are seen in hyperthyroidism)
Conjunctivitis - inflammation of the conjunctiva (bulbar, palpebral or both), limbal sparing, blanches.
Episcleritis - inflammation of the scleral vessels, most intense at the limbus, does not blanch.
Limbus - margin of the iris

Extraocular motion - EOM

Heterophoria
Esophoria - one eye turned nasally
Exophoria - one eye turned temporally
Cover test - cover one eye, when you remove the cover (and place it on the other eye) the deviated eye (which will be deviated when covered) will move when uncovered.
Strabismus - severe heterophoria
Amblyopia - long standing strabismus results in suppression of vision
Oculomotor - CN III, up/down/medially
Trochlear - CN Iv, down/medially
Abducens - CN VI, lateral

	superior rectus		inferior oblique
EAR	lateral rectus	---------------------------	medial rectus
NOSE	inferior rectus		superior oblique

Cornea - +15 black

arcus senilis - may be normal in the elderly, pathologic in the young patient (hyperlipidemia)

Anterior chamber

hyphema - blood in the anterior chamber
hypopyon - pus in the anterior chamber
narrow angle glaucoma - shallow anterior chamber
open angle glaucoma - normal anterior chamber depth

Pupil

accommodation - pupils constrict with near vision
consensual response - when light falls upon one pupil, they both constrict synechiae - adhesions from lens to cornea (causes irregular pupils)
anisocoria - unequal pupils (CN II, III, ANS)

Lens - +6 black

cataract - any lens opacity
dislocated pupil - curvilinear edges of the lens seen intersecting the pupil.

Retina - 0 to -6 red

ACUTE GLAUCOMA

A. GENERAL CONSIDERATIONS

Acute closed-angle glaucoma occurs as a result of the closure of a preexisting narrow anterior chamber of the eye. Approximately 1% of the population over the age of 35 have narrow anterior chambers, but most of these individuals do not develop acute glaucoma.

B. ESSENTIALS OF DIAGNOSIS

1. Sudden onset of blurred vision and extreme eye pain.
2. The pupil is moderately dilated and does not respond to light.

   a. Pupil must be dilated for this to occur. Examples include going from bright light into a dark room or the result of drugs (Atropine, Actifed, Amphetamines, Scopolamine, Elavil, etc.).

3. Intraocular pressure (IOP) is elevated.
4. Colored halos around lights.
5. Nausea and vomiting may occur.
6. Mild photophobia.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

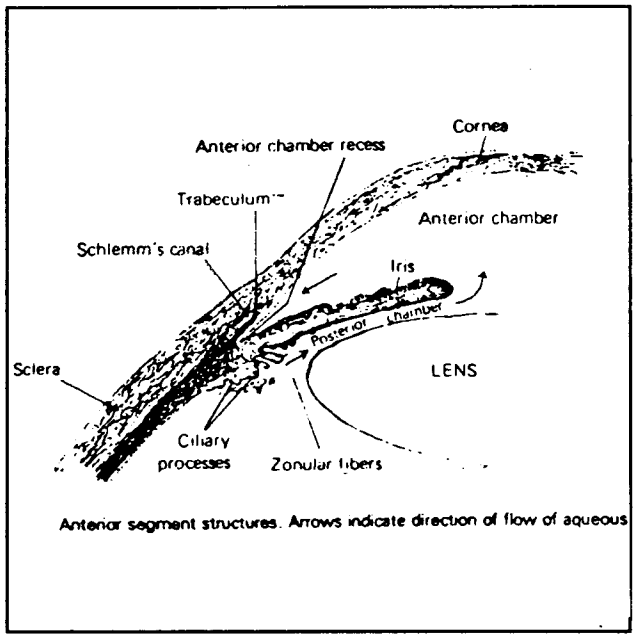
1. Blindness within 2-5 days if untreated.

F. TREATMENT

1. Obtain visual acuity.
2. Instil miotics, if available, such as pilocarpine 1%.
3. Give Diamox 500mg PO bid, unless the patient is allergic to sulfa drugs.

G. DISPOSITION

1. Contact a Medical Officer and prepare for MEDEVAC.



Anterior segment structures. Arrows indicate direction of flow of aqueous

BLEPHARITIS

A. GENERAL CONSIDERATIONS

Blepharitis is a common chronic bilateral inflammation of the lid margins that may be caused by infection or allergy.

B. ESSENTIALS OF DIAGNOSIS

1. Foreign body sensation in eye.
2. Red rimmed lid margins.
3. Formation of scales on eye lashes.
4. Burning, itching, and irritation.
5. May be associated with seborrhea of the scalp, brows, or ears.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. None.

F. TREATMENT

1. Remove eyelid scales daily with a moist cotton tip applicator.
2. Treat the seborrhea with antiseborrheic soaps or dilute baby shampoo.
3. Apply Sodium Sulfacetamide ophthalmic ointment to eyelashes TID.

G. DISPOSITION

1. Provide routine referral to ophthalmology clinic.

CONJUNCTIVITIS

A. GENERAL CONSIDERATIONS

Conjunctivitis is an acute conjunctival inflammation that may be caused by viruses, bacteria, or allergies.

The important symptoms to this disease are a FB sensation, burning sensation, a sensation of fullness around the eyes, itching and (when the cornea is involved) photophobia.

B. ESSENTIALS OF DIAGNOSIS

1. Viral conjunctivitis:

   a. Red conjunctiva.
   b. Copious watery discharge with scant exudate.
   c. Preauricular lymphadenopathy may occur.
   d. Usually self-limiting and lasts no more than 2 weeks.

2. Allergic conjunctivitis:

   a. History of bilateral chronic or recurrent conjunctivitis.
   b. Tearing, intense itching, and redness.
   c. Minimal stringy discharge.
   d. In palpebral form:

      1) "Cobblestone" granulations are present chiefly on the upper lids.
      2) Uninvolved tarsal conjunctiva is milky white.

   e. In bulbar (limbic) form:

      1) Circumcorneal conjunctiva becomes hypertrophied and grayish.
      2) Pain and increased photophobia.

3. Bacterial conjunctivitis:

   a. Copious purulent discharge.
   b. Self limiting, lasting 10 - 14 days.(Exceptions are N. gonorrhoea, N. meningitis, and Staphylococcal).

FINDINGS	VIRAL	BACTERIAL	CHLAMYDIAL	ATOPIC
Itching	minimal	minimal	minimal	severe
Hyperemia	general-ized	general-ized	general-ized	general-ized
Tearing	profuse	moderate	moderate	moderate
Exudation	minimal	profuse	profuse	minimal
Preauricular adenopathy	common	uncommon	in inclusion	none
Stains	monocytes	bact. PMN's	PMN's	eos

C. LABORATORY TESTS

1. Viral conjunctivitis - none.
2. Allergic conjunctivitis - microscopic exam of discharge.
3. Bacterial conjunctivitis - Gram stain of discharge (culture if available).

D. LABORATORY FINDINGS

1. Viral - none.
2. Allergic - numerous eosinophils in discharge.
3. Bacterial - polymorphonuclear leukocytes in discharge.

E. COMPLICATIONS

1. Viral - secondary bacterial infection.
2. Allergic - rare.
3. Bacterial - rare.

F. TREATMENT

1. Viral:

   a. No specific treatment.
   b. Use Sulfacetamide ophthalmic ointment to prevent secondary bacterial involvement.

2. Allergic:

   a. Treat allergy symptoms with antihistamines.
   b. Ophthalmic vasoconstrictors may provide immediate relief from symptoms.

3. Bacterial:

   a. Administer Sulfacetamide ophthalmic ointment or bacterial specific antibiotic.
   b. Do not use antibiotic-corticosteroid combinations.

4. Chlamydial:

   a. Administer Terramycin ophthalmic.

NEVER ADMINISTER STEROIDS - REFER TO OPHTHALMOLOGIST FOR TREATMENT

G. DISPOSITION

1. Viral - none.
2. Allergic - may need referral to allergist for specific therapy.
3. Bacterial - none, however, if you suspect N. Gonorrhoea or N. meningitidis, contact a Medical Officer.
4. Any bacterial conjunctivitis that is not showing signs of improvement in 2 - 3 days, contact a Medical Officer.

CORNEAL ULCERS

A. GENERAL CONSIDERATIONS

Without early and appropriate treatment, corneal ulcers cause visual impairment and blindness in the affected eye. The major causes (in otherwise healthy adults) are long term use of topical anesthetics, corticosteroids, extended use of contact lenses, corneal abrasions, viral infections and bacterial infections (mainly Streptococcus pneumoniae). Topical corticosteroid use can lead to bacterial, viral and fungal ulceration and therefore should be used only on recommendation of a ophthalmologist.

B. ESSENTIALS OF DIAGNOSIS

1. Prior history of corneal disease, foreign body, corneal abrasion or corticosteroid use all increase the potential for corneal ulceration.
2. Symptoms - pain, blurring of vision, photophobia and excessive tearing.
3. Signs - limbal flush, conjunctival injection, gray/necrotic ulcer overlying the cornea, you may see hypopyon (pus in the anterior chamber) formation.
4. Branching effect of an ulcer suggests a viral (Herpetic) etiology.

C. LABORATORY TESTS

1. Gram stain - use a sterile cotton tip applicator.

D. LABORATORY FINDINGS

1. Gram (+) cocci
2. Gram (-) cocci
3. Gram (-) rods
4. No organism noted.

E. COMPLICATIONS

1. Corneal scarring and blindness.
2. Perforation of cornea.

F. TREATMENT

1. Treat the underlying cause:

   a. Gram (+) cocci: use Sodium Sulfacetamide ophthalmic.
   b. Gram (-) cocci: use Polysporin ophthalmic.
   c. Gram (-) rods: use Polysporin ophthalmic.
   d. All others: use Sodium Sulfacetamide ophthalmic.
   e. No organisms noted but ulcer clinically suggestive of bacterial etiology: use Polysporin ophthalmic.
   f. Discontinue corticosteroids or anesthetics.

2. Herpetic lesions: Instill 1% Atropine and apply a pressure patch. Check daily until MEDEVAC.

G. DISPOSITION

1. Contact a Medical Officer ASAP.
2. Prepare for immediate MEDEVAC within 12 hours.

FLASHBURNS

A. GENERAL CONSIDERATIONS

Burns of the cornea can result from ultraviolet radiation, such as a welding arc, sun lamps, or bright sunlight.

B. ESSENTIALS OF DIAGNOSIS

1. History of exposure to ultraviolet radiation.
2. Subjective complaint of agonizing pain or sensation of having sand in the eyes.
3. Photophobia.
4. Conjunctival injection.
5. Copious tearing.
6. Symptoms usually occur almost 12 hours after exposure.
7. Fluorescein stain reveals diffuse punctuate staining.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Corneal ulcerations.
2. Blindness.

F. TREATMENT

1. Obtain visual acuity.
2. Examine eye for foreign body.
3. Patch both eyes; leave patches on for 24 hours and then recheck. The condition usually resolves in 24 - 48 hours.
4. Give systemic analgesics or sedatives for pain.
5. Avoid long-term use of topical anesthetics as they may retard healing and cause corneal ulcerations.
6. Instill Sodium Sulfacetamide ophthalmic ointment if not allergic.

G. DISPOSITION

1. Contact a Medical Officer if complications occur.

IRITIS

A. GENERAL CONSIDERATIONS

Iritis is an inflammation of the iris that may be caused by trauma, corneal ulcer, retinal detachment, or viral infection.

B. ESSENTIALS OF DIAGNOSIS

1. Excessive tearing
2. Pupils appear small and irregular.
3. Details of the iris are hazy, dull and swollen.
4. In severe cases a cream-colored fluid will be seen in the inferior part of the anterior chamber.
5. Moderate to severe pain.
6. Decreased visual acuity.
7. Injection.
8. Blurred vision.
9. Photophobia.
10. Circumcorneal flush.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Blindness.

F. TREATMENT

1. Administer systemic analgesics.
2. Atropine ophthalmic, 1% 2 qtts BID for prevention of posterior synechia and photophobia.
3. Warm compresses will provide some relief.

G. DISPOSITION

1. Seek Medical Officer advice ASAP.
2. MEDEVAC patient.